

Sub B7

1 1. A data storage system for transferring data between a host computer/server
2 and a bank of disk drives through a system interface, such system interface comprising:
3 a plurality of first directors coupled to the host computer/server;
4 a plurality of second directors coupled to the bank of disk drives;
5 a data transfer section coupled to the plurality of first directors and second directors;
6 a messaging network coupled to the plurality of first directors and the plurality of second
7 directors, such first and second directors controlling data transfer between the host computer
8 and the bank of disk drives in response to messages passing between the directors through the
9 messaging network as such data passes through the data transfer section; and
10 wherein each one of such messages transferred through the messaging network is associated
11 with a descriptor, such descriptor having a command field indicating the one or ones of the
12 directors which are to receive such message, such command field having a plurality of bits, each
13 bit being associated with a corresponding one of the directors, one logic state of such bit
14 indicating that such corresponding director is to receive the message and another logic state of
15 such bit indicating that such corresponding director is not to receive such message.

1 2. The data storage system recited in claim 1 wherein the message network transmits each
2 message sequentially to a plurality of the directors.

1 3. The data storage system recited in claim 2 wherein each one of the directors has a mask
2 stored therein, such mask having a plurality of bits, each one of such bits of the mask being
3 associated with a corresponding one of the directors, each one of the bits indicating the an
4 availability or unavailability of the corresponding one of the directors.

1 4. The data storage system recited in claim 3 wherein the message network compares the
2 command field of a message to be transmitted with the mask and sequentially transmits the
3 message to only those directors which are indicated by the mask as being available.

1 5. A method for transferring data between a host computer/server and a bank of disk drives
2 through a system interface, such system interface comprising: a plurality of first directors
3 coupled to the host computer/server; a plurality of second directors coupled to the bank of
4 disk drives; a data transfer section coupled to the plurality of first directors and second
5 directors; and a messaging network coupled to the plurality of first directors and the plurality
6 of second directors, such first and second directors controlling data transfer between the host
7 and the bank of disk drives in response to messages passing between the directors through the
8 messaging network as such data passes through the data transfer section; and
9 wherein each one of such messages transferred through the messaging network is associated
10 with a descriptor, such descriptor having a command field indicating the one or ones of the
11 directors which are to receive such message, such command field having a plurality of bits, each
12 bit being associated with a corresponding one of the directors, one logic state of such bit
13 indicating that such corresponding director is to receive the message and another logic state of
14 such bit indicating that such corresponding director is not to receive such message.

10 computer and the bank of disk drives in response to messages passing between the directors
11 through the messaging network as such data passes through the data transfer section; such
12 method comprising:

13 associating with each one of such messages transferred though the message network, a
14 descriptor, such descriptor having a command field indicating the one or ones of the directors
15 which are to receive such message, such command field having a plurality of bits, each bit being
16 associated with a corresponding one of the directors, one logic state of such bit indicating that
17 such corresponding director is to receive the message and another logic state of such bit
18 indicating that such corresponding director is not to receive such message.

1 6. The method recited in claim 5 including transmitting each message sequentially to a plurality
2 of the directors.

1 7. The method recited in claim 6 including providing in each one of the directors a mask stored
2 therein, such mask having a plurality of bits, each one of such bits of the mask being associated
3 with a corresponding one of the directors, each one of the bits indicating the an availability or
4 unavailability of the corresponding one of the directors.

1 8. The data method recited in claim 7 wherein each one of the directors compares the command
2 field for a message to be transmitted with the mask and sequentially transmits the message to
3 only those directors which are indicated by the mask as being available.

1 9. A data storage system for transferring data between a host computer/server and a bank of
2 disk drives through a system interface, such system interface comprising:

3 a plurality of first directors coupled to the host computer/server;
4 a plurality of second directors coupled to the bank of disk drives;
5 a cache memory;
6 a data transfer section coupled to the plurality of first directors, the second directors, and
7 the cache memory;

8 a messaging network coupled to the plurality of first directors and the plurality of second
9 directors, such first and second directors controlling data transfer between the host computer
10 and the bank of disk drives in response to messages passing between the directors through the
11 messaging network as such data passes through the cache memory via the data transfer section;
12 and

13 wherein each one of such messages transferred through the messaging network is associated
14 with a descriptor, such descriptor having a command field indicating the one or ones of the
15 directors which are to receive such message, such command field having a plurality of bits, each
16 bit being associated with a corresponding one of the directors, one logic state of such bit
17 indicating that such corresponding director is to receive the message and another logic state of
18 such bit indicating that such corresponding director is not to receive such message.

1 10. The data storage system recited in claim 9 wherein the message network transmits each
2 message sequentially to a plurality of the directors.

1 11. The data storage system recited in claim 10 wherein each one of the directors has a mask
2 stored therein, such mask having a plurality of bits, each one of such bits of the mask being
3 associated with a corresponding one of the directors, each one of the bits indicating the an
4 availability or unavailability of the corresponding one of the directors.

1 12. The data storage system recited in claim 11 wherein the message network compares the
2 command field of a message to be transmitted with the mask and sequentially transmits the
3 message to only those directors which are indicated by the mask as being available.

1 13. A method for transferring data between a host computer/server and a bank of disk drives
2 through a system interface, such system interface comprising: a plurality of first directors
3 coupled to the host computer/server; a plurality of second directors coupled to the bank of
4 disk drives; a cache memory; a data transfer section coupled to the plurality of first directors,
5 the second directors, and the cache memory; and a messaging network coupled to the
6 plurality of first directors and the plurality of second directors, such first and second directors
7 controlling data transfer between the host computer and the bank of disk drives in response to
8 messages passing between the directors through the messaging network as such data passes
9 through the cache memory via the data transfer section; such method comprising:

10 associating with each one of such messages transferred though the message network, a
11 descriptor, such descriptor having a command field indicating the one or ones of the directors
12 which are to receive such message, such command field having a plurality of bits, each bit being
13 associated with a corresponding one of the directors, one logic state of such bit indicating that
14 such corresponding director is to receive the message and another logic state of such bit
15 indicating that such corresponding director is not to receive such message.

1 14. The method recited in claim 13 including transmitting each message sequentially to a
2 plurality of the directors.

1 15. The method recited in claim 14 including providing in each one of the directors a mask
2 stored therein, such mask having a plurality of bits, each one of such bits of the mask being
3 associated with a corresponding one of the directors, each one of the bits indicating the an
4 availability or unavailability of the corresponding one of the directors.

1 16. The data method recited in claim 15 wherein each one of the directors compares the
2 command field for a message to be transmitted with the mask and sequentially transmits the
3 message to only those directors which are indicated by the mask as being available..